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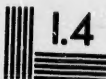
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I. M. J. A.

MARIE DE L'INCARNATION

Arsulines of Quebec.

August, 1886.

QUEBEC:

C. DARVEAU, PRINTER AND PUBLISHER,
No. 80 to 82, Mountain Hill.

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1931

GENERAL AND COMPARATIVE VIEWS.

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GENERAL AND COMPARATIVE VIEWS.

GEOGRAPHY.

THE ATMOSPHERE.

1. What is the Atmosphere?

Common air, or the atmosphere, is a fine, invisible elastic fluid, surrounding the earth, and extending 54 or 50 miles above its surface.

The higher you ascend the rarer is the atmosphere, and on the tops of the highest mountains it is so thin that animals can scarcely breathe it.

The air is expanded by heat and contracted by cold and these changes put it in motion, the warm air ascending, and the cold air rushing in to supply its place.

WINDS.

2. What is wind, and where do the trade winds prevail?

The motion of the air is called wind.

The winds, in a great part of the torrid zone, espe-

cially on the ocean at a distance from land, blow constantly from the east, and are called trade winds, because they facilitate trading voyages.

The trade winds are caused partly by the diurnal motion of the earth from west to east, and partly by the heat of the sun rarefying the air within the tropics, and causing currents to rush in to restore the equilibrium.

Under the equator the trade winds are due east; and as you go from the equator toward the north, they incline to northeast, and toward the south, to southeast.

High lands interrupt the course of the trade winds. Under the lee of the African shore, for example, near the Cape Verd islands, calms and variable winds prevail; and the lofty barrier of the Andes shelters the sea near the western coast of South America, so that ships do not feel the trade winds till they are 80 leagues from the shore.

3. Where do the monsoons prevail?

In the Indian ocean the trade winds are curiously modified by the surrounding land. Between the southern tropic and 10° S. lat., where there is little land to disturb the motions of the air, the regular trade winds prevail; but north of this last parallel, southwest winds, accompanied by rain, prevail from April to October, and dry, northeast winds from October to April. These winds are called *monsoons*, and the change from one monsoon to another is attended by violent storms.

In the temperate and frigid zones the winds are variable, blowing irregularly, sometimes from one point and sometimes from another.

4. At what rate does the wind move, and what are hurricanes?

When the wind moves at the rate of 4 or 5 miles an hour, it is a gentle breeze; at the rate of 15 or 20

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miles, a brisk gale; at the rate of 30 miles, a high wind; and at the rate of 100 miles, a hurricane or tornado.

Hurricanes are generally whirlwinds, confined to a narrow path, with a progressive motion, sometimes of only 10 or 15 miles an hour.

Hurricanes are more frequent and destructive in the West Indies, and on the shores of China and Farther India, than in any other part of the world. In China they are called *typhoons*.

5. What are sea and land breezes? — the simoon and the sirocco?

The islands and shores within the tropics are refreshed by sea and land breezes; the sea breeze, or wind from the sea, always blowing during the day, and the land breeze, or wind from the land, during the night.

In Africa and Arabia a hot, pestilential wind, called the *simoon*, or *samiel*, and the *kamsin*, blows at certain seasons from the parched deserts. In Italy it is modified by passing over the Mediterranean, and is called the *sirocco*.

RAIN.

6. Where is rain most abundant?

Rain is very unequally distributed to the different parts of the globe. It is generally more abundant the nearer you approach the equator.

Under the equator the depth of rain which falls annually is about 96 inches; and as you go toward the poles it diminishes, till at the latitude of 60° it is only 17 inches; but the number of rainy days increases with the latitude.

7. In what part of the world are the rains regular?

In the torrid zone the rains, like the winds, occur regularly at certain seasons of the year. The rainy

season, north of the equator, lasts from April to October; and south of the equator, from October to April.

In the vicinity of cape Verd there is an extensive tract of sea where opposite winds meet, producing perpetual calm and perpetual rain.

In Egypt, Peru, and Chili, there are large districts in which it never rains.

TEMPERATURE.

8. On what does the temperature chiefly depend?

The temperature of any region, depends chiefly upon its distance from the equator, and its elevation above the level of the sea.

In proportion as you go from the equator to the poles the cold increases; and in proportion as you ascend above the level of the sea the cold increases.

In the torrid zone low countries are hot and unhealthy, but countries elevated 6000 or 8000 feet above the sea enjoy perpetual spring, while at the height of 13 or 14,000 feet the climate is the same as in the frigid zone.

9. What is the line of perpetual snow in the different zone.

Under the equator mountains more than 15,000 feet high are covered with perpetual snow; and the line of perpetual congelation continually descends as you go toward the poles. In latitude 40° it is about 9000 feet above the level of the sea; in latitude 50° , about 6000; and in latitude 60° , only 3000 feet.

THE SEA.

10. What is the sea, and how does it affect temperature?

The sea, in its widest sense, embraces the five oceans, and all the gulfs and other large bodies of salt water directly connected with them.

It is commonly estimated that the sea covers about three quarters of the surface of the globe.

One great use of the sea is to equalize the temperature of the globe. Water has a great capacity for heat, and by the currents of the ocean the water heated within the tropics is carried to the borders of the frigid zones.

11. How are warm regions made colder, and cold region made warmer by the sea?

The sea at the distance of 4 or 500 miles around the poles, seems to be constantly covered with ice, and mountains of ice, called *icebergs*, rising sometimes 100 feet above the water, are often floated by winds and currents far within the temperate zones.

The vapors raised by the heat of the sun from the ocean form clouds, which are carried by winds to far distant regions, where they give out their heat to the air, and their water to feed rivers, plants, and animals.

Another great use of the sea is to facilitate intercourse and commerce between distant nations, bulky and heavy articles being carried across the sea in ships with great rapidity and at little expense.

TIDES.

12. What are tides?

Tides are the regular rise and fall of the water in the sea twice every 25 hours.

The tides are caused chiefly by the attraction of the moon, but partly by that of the sun, and are highest when the sun and moon are on the same side of the earth.

The height to which the tide rises in any place depends much on the shape of the land against which the great tide wave strikes; the highest tides in the middle of the Pacific ocean being only 5 feet, while in some tunnel shaped channels, as in the bay of Fundy and part of the British channel, they rise to the height of 40 feet, and even higher.

CURRENTS.

13. In what direction does the great current of the sea run?

Within the tropics the trade winds cause a current across the Pacific, Indian, and Atlantic oceans, generally from east to west, but modified in different parts of its course by the shape of the land, and by other currents setting in from the Polar seas.

14. Describe its course after doubling the cape of Good Hope.

After doubling the cape of Good Hope, this current runs north to the Cape Verd islands, and there turns west, passes through the Caribbean sea, between Cuba and Yucatan, round the Mexican gulf, through the straits of Florida, and along the shores of the United States (where it is called the Gulfstream) to Newfoundland. At this point it is turned to the southeast by a polar current, and, passing the Azores and Canary isles, returns in a great measure into itself.

16. What is the course of different branches of this current?

One branch of this current runs east into the Mediterranean; another south, along the shores of Brazil, and through the straits of Magellan into the Pacific; and others still are so modified by the polar currents as to form immense whirlpools, embracing large portions of the ocean. Smaller whirlpools caused by tides and currents meeting in narrow passages, are very dangerous, often drawing in ships and dashing them upon the rocks. The most celebrated of these are the Maelstrom on the coast of Norwap, and Charybdis in the straits between Sicily and Italy.

VEGETALES.

16. In what zone is vegetation most luxuriant?
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greatest in the torrid zone, and diminish as you go toward the poles.

Among the most remarkable vegetables of the torrid zone are. the *sago palm*, which yields a juice so thick and nutritious that it is used for food ; the *bread-fruit-tree* and *plantain*, which produce a fruit resembling bread ; the *teak* of India, which is used for ship building, and surpasses even the oak in firmness and durability ; the mighty *Baobab*, which grows on the banks of the Senegal, and attains a circumference of 60 and 70 feet ; and the great *fan palm* of India, one leaf of which will cover ten or a dozen men. The torrid zone also yields the most *fragrant spices* and the most *luscious fruits*.

17. Name some of the most noted vegetable of the temperate zones.

The lower latitudes of the temperate zones yield the *vine*, from the fruit of which wine is made ; the *mulberry* on the leaves of which the silk-worm feeds ; the *olive* which produces sweet oil ; *wheat*, *barley*, and other nutritious grain and *cotton*, which is now more extensively used for clothing than any other material.

In the higher latitudes of the temperate zones, wheat grows with difficulty, but *oats*, *hemp*, and *flax* are raised in perfection ; the pastures are rich and verdant with *grass* ; the forests yield the *oak*, the *ash*, the *elm*, &c., and the *apple*, *pear*, *cherry*, *currant*, *gooseberry*, &c., are abundant.

18. Describe the vegetation of the frigid zones.

In the frigid zones, and in some countries even as low as the parallel of 60°, nature assumes a gloomy and desolate aspect. The *pin*es and *firs* at first rear their tall heads and cover the hills with their constant mantle of dark green, but as you advance toward the north every species of vegetable which yields food to man entirely fails ; and nothing appears but dwarf trees, bushes and mosses.

ANIMALS.

19. Name some of the most noted animals and birds of the torrid zone.

The torrid zone is as luxuriant in its animals as in its vegetables. The mighty *elephant* here dwells in the depth of ancient forests, while the *rhinoceros* and the *hippopotamus* roll their enormous bodies along the banks of the streams.

The most ferocious animals in this zone are the *lion*, the *tiger*, the *leopard*, the *panther*, the *ounce*, and the *hyena*, while in the great rivers *crocodiles* and *alligators* are ready to devour the unwary.

This burning zone generates swarms of *venomous reptiles* and *serpents* of enormous size, while *locusts*, *flies*, and *ants* move in such close and immense armies as to lay waste the earth, and drive nation before them.

The largest birds are the *ostrich*, the *cassowary*, and the *condor*; and small birds of brilliant and exquisitely beautiful plumage, but less melodious in their notes than the birds of the temperate zones, abound in the forests.

20. What is said of the corals?

Among the marine insects are the *corals*, which have stony cases that remain after the death of the animal, and gradually accumulating and adhering to each other, at length form large rocks and even islands. The Pacific ocean from New Holland to the Friendly islands abounds with corals, and ships are in constant danger of striking against rocks of this substance.

21. What valuable and useful animals are found in the temperate zones?

In the temperate zones are few monstrous or ferocious animals; but the *horse*, *ox*, *sheep*, *goat*, *hog*, *dog*, *cat*, and other valuable domestic animals are found in great perfection, nearly to the parallel of 60°.

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As we approach the 60th degree of latitude, the *elk*, the *marten*, the *sable*, the *beaver*, the *ermine*, animals covered with a rich and beautiful fur, which is eagerly sought after by man for purposes of comfort and luxury, and hence these frozen countries have become the region of an extensive fur trade. The most useful domestic animal in this climate is the *reinder*.

22. Name some of the largest animals of the frigid zones?

In the frigid zones the quadruped species again assume a fierce and formidable character. The *great white bear* roams over the fields of ice, and rushes boldly to the attack of man; the *walrus*, or *sea-horse*, rises amid the ice-bergs with his enormous tusks; and the mighty *whale* rolls through the sea, and mingles his frightful roarings with sound of the tempest.

METALS AND MINERALS.

23. Where are gold and silver found in greatest abundance?

Gold is usually found in a perfectly pure state at the foot of ranges of mountains, from which it is washed down by rivers. It is most abundant in California, South America, East and West Africa, and Australia. In 1866, a mass of gold, three feet long, and nearly pure, was taken from a quartz-mine, near Placerville in California. Canada also possesses gold mines which have been worked since some time, at St. François de la Beauce.

The richest silver mines are those of Mexico and Bolivia. Since the discovery of America, nine tenths of all the silver in the world have come from these mines. Silver mines are found in all the states of South America.

24. Where are the most productive mines of iron and copper?

Iron is very generally diffused, but the most productive mines of this useful metal are those of G. Britain, France, Russia, Sweden, and Pennsylvania; also those of Van-Dieman, the Celebes and Philippine Islands. Iron is the principal mineral riches hitherto explored in Canada. It abounds in the northern mountains, in the valleys of the rivers St. Maurice and Batiscan, in St. Paul's Bay and in the south-eastern Townships.

Copper is found in Norway, Sweden, Chili, Wisconsin, and other countries; but the most abundant supply is from the mines of Cornwall in England. In Acton, near Drummondville (Canada,) are copper mines of a very good quality.

25. Where are lead, tin, and quicksilver chiefly found?

The most productive lead mines in the world are those of Great Britain; and of Missouri, Illinois, and the adjoining territories in the United States of America.

Tin is comparatively a rare metal. The chief mines are those of Cornwall in England, and of Banca, a small island near Sumatra.

Quicksilver is obtained chiefly from the mines of Idria in Austria, of Almaden in Spain, and of Huancavelica in Peru. It has been found recently in California.

26. Where are coal and salt found in greatest abundance?

Coal, a source of greater wealth than gold, is found in inexhaustible quantities in many countries, but the most noted coal mines are near Newcastle in England. In Canada, the coal mines of Sidney in Cape Breton Island, and those of Pictou in Nova Scotia, are explored with great advantage.

Salt is made in large quantities in many countries by evaporation of sea water, and of the water of salt

springs. The most noted mines of rock salt in the world, are those of Wielicka in Austrian Poland. Vessels from Europe bring quantities of salt from the coasts of Spain.

RIVERS AND MOUNTAINS.

27. Name the largest rivers in the world ?

The largest river in the world is the Amazon, in South America. It rises in the Andes, in Peru, waters Brazil, and enters the Pacific Ocean after a course of 4,300 miles, its mouth being 120 miles wide. The Missouri and Mississippi united, equal the Amazon in length. The Yank-tse Kiang or Blue River, in Asia, and the Nile, in Africa, are about 3,000 miles long. The Volga, in Europe is about 2,400 miles. Then comes the St. Lawrence, in Canada, 2,220 miles long. It is one of the most beautiful rivers in the world, the second in rank for the mass of its waters, and the first for the facility its offers to navigation.

28. What are the loftiest mountains in the world ?

The loftiest peak on the globe is Mount Everest, in the Himalaya Mountains, in Thibet. It is 29,000 feet high (about five miles). The highest peaks in the other parts of the world, are, in South America, Mount Aconcagua, in the Andes (23,000 feet); in Africa, Mount Kilimanjaro, in the Mountains of the Moon (20,000 feet); in North America, Mount St. Elias, (18,000 feet); in Oceanica, Mount Mouna-Roa, in the Sandwich Islands (17,000 feet); in Europe, Mount Blanc, in the Alps (15,000 feet).

POPULATION AND GOVERNMENT.

29. Name the five parts of the world according to their population.

Geographers do not agree on the population of the

world. The average calculation gives more than a billion of inhabitants, divided as follows:

1 Asia.....	633,000,000
2 Europe.....	296,000,000
3 Africa.....	92,700,000
4 America.....	87,078,000
5 Oceanica.....	25,424,000

30. Name the five parts of the world according to their extent.

With regard to their extent, the five parts of the world are ranked as follows: 1st Asia, 2nd America, 3rd Africa, 4th Oceanica, 5th Europe. Considering its extent, Europe is by far the most populous, since it has 68 inhabitants to a square mile, whilst Asia has but 25, Africa 6, Oceanica 5, North America 5, South America 2.

31. What are the most populous countries in the world?

The Chinese Empire is the most populous in the world; it contains about 450,000,000 inhabitants, that is to say, more than one third of the whole population of the globe. Hindostan contains about 180,000,000. Russia in Europe, more than 68,000,000, and the Russian Empire, 82,000,000. The population of the British Isles is 20,000,000 (England alone 21,000,000); and that of the British Empire, 234,000,000.

France has a population of 43,000,000; Germany, the Turkish Empire, and the United-States, about 40,000,000; Austria, 36,000,000; Italy, 26,000,000; Spain, 22,000,000.

Belgium is the most thickly settled country on the earth, containing 5,087,000 inhabitants, on an extent of 11,400 square miles, that is, 447 to a square mile.

The population of the Dominion of Canada is 3,580,000.

32. What are the different forms of government throughout the world.

The different forms of government in the world may be reduced to two kinds, the monarchical, and the republican. In a monarchy, the country is governed by one head, called a sovereign. If the monarchy be *absolute*, the sovereign power is held by the monarch, without any other restriction than the fundamental laws of the state. In a *constitutional* monarchy, besides the fundamental laws, the people have their representatives. In a *limited* monarchy, the three powers are so blended as to counterbalance each other.

33. What is meant by a republic?

In a republic, the nation governs itself by delegates. There are three kinds of republics: the *aristocratic*, when the government is in the hands of the higher class of citizens; the *oligarchical* when the power is held by a few; the *democratic*, when the majority of the nation has a part in the government.

There are also confederate republics, composed of different states, each of which has its own constitution.

RACES OF MEN AND STATES OF SOCIETY

34. How many varieties of the human species are there?

Man, the lord of the animal creation, has a constitution which fits him for residence in every climate, but his outward characteristics are not the same in every country.

Naturalists commonly reckon five varieties of the human species, easily known by very striking differences of feature, and especially by the color peculiar to each race.

- 1th The Caucasian race is white;
- 2nd The Mongolian, olive yellow;

- 3rd The Malay, dark brown ;
4th The Ethiopian, black ;
5th The American, red, or copper colored.

35. What nations belong to those different races of men ?

The *Caucasian* race comprises nearly all the Europeans, the Turks, Arabs, Persians, and other Western Asiatics, and a large part of the Hindoos.

The *Mongolians* embrace the Chinese, Japanese, and the inhabitants of eastern and southeastern Asia generally, except the Malays.

The *Malays* are mostly confined to the isles of the Pacific, and the peninsula of Malacca.

The *Ethiopian* race includes the Negroes, Caffres, and Hottentots of Africa, and the Papuans or Negroes of Australasia.

The *American* race comprises the Indians of North and South America.

The Caucasians are the most civilized and enlightened of these races, and have generally ruled the rest whenever brought in contact with them.

36. Into what classes are men usually divided as to their social state ?

With respect to their social state, men may be divided into four classes. savage, barbarous, half-civilized, and civilized.

In the *savage* state, men subsist by hunting, fishing, and the spontaneous productions of the earth ; hence they are usually thinly scattered over a wide country, rude, ignorant, and destitute of most of the comforts of life.

In the *barbarous* state, subsistence is derived chiefly from pasturage and rude agriculture ; men in this state usually live in tents, and wander from place to place with their flocks and herds. In some cases subsistence is obtained by systematic piracy and robbery.

Among the *half-civilized* nations, agriculture and some of the finer manufactures are carried on with great care and to a very high degree of perfection but foreign commerce is almost unknown.

In the *civilized* state, science, the arts, and all the various institutions and arrangements of society, are in a highly improved form.

37. What people are savages, barbarous, half-civilized and civilized?

The American Indians, and a great part of the negroes in Africa and Australasia, are savages.

The Arabs, Tartars, and Malays in Asia, and the Moors of Northern Africa, are in the barbarous state.

The Chinese, Japanese, Hindoos, Persians, and Turks are half-civilized nations.

Europeans, and their descendants generally, are regarded as civilized, but the degrees of civilization are very different in different countries.

RELIGIONS AND LANGUAGES.

38. What two great divisions of religious belief reign in the world?

The religion of all the people of the earth, admits of two distinct divisions: Mono-theism, or the belief in one God, Poly-theism, or the belief in many gods. There are nearly 600 millions of pagans or those who worship false gods, that is to say, more than half the population of the globe.

39. How many divisions does Mono-theism comprise?

Mono-theism comprises three divisions. In the first place, Christianity, which is the only true religion, revealed by the Man God-Jesus-Christ. 2nd the Greek schism, commenced by Photius (800 A. D. D.) -- 3rd Protestantism, headed by Luther and Calvin in the 16th century. There are about 300 millions of Christians, of whom nearly 200 millions are Catholics, more than 600 millions Greek Schismatics; the remainder,

nearly 60 millions, are Protestants of various denominations.

40. What are the two other divisions of Mono-theism?

Mono-theism comprises also Judaism and Mahometanism. Judaism is founded on the books of the Old Testament; it is divided into two sects; the Jewish religion in the proper sense of the word, and the Samaritan rite.

Islamism Mahometanism, or the religion of the Musulmans, established by Mahomet in the year of our Lord, 622, forms also two divisions: the sect of Omar and that of Ali. It is computed that there are more than 4 millions of Jew, and more than 120 millions of Mahomedans.

41. What are the divisions of Poly-theism?

Poly-theism comprises; 1st Idolatry or Fetichism, the adoration of idols or animals deified. 2nd Sabaism, the adoration of the sun and star; 3rd Brahmanism, which teaches the existence of a God, but abounds with ridiculous and even barbarous customs, such as obliging a widow to be burned of the pile that consumes the body of her deceased husband; 4th Buddhism or the religion of Buddha; 5th Lamaism or worship of the Grand Lama: The head of that religion in Thibet. These religions are branches of the religion of Brahma, and like it, they are of great antiquity.

42. Name the countries where these different religions prevail?

Christianity prevails in Europe and in the European settlements throughout the world: Mahometanism is spread over the north of Africa, and the western parts of Asia. Jews are more numerous in Poland than in any other country, but they are to be found in almost all the great cities of the world.

The inhabitants of the south-western parts of Asia are still blinded by Paganism, as are also the greater part of the uncivilized nations on the face of the earth.

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Protestantism prevails in the northern part of Europe, in the United States of America, as well as in the English and Dutch settlements which exist throughout the world. The greater part of the Russians and Greeks belong to to the Greek schismatic church.

Catholicity is the religion of the central and southern parts of Europe. of Ireland, Poland; and of the French, Spanish, and Portuguese settlements on the globe. It may be added there are millions of Catholics in South America, the United States and in all the other countries mentioned as Protestant; besides the conversions made in the very bosom of nations that are most opposed to her, in Asia, Africa, America and in the Islands of Oceanica.

43. What languages are most commonly spoken on the globe ?

A great number of languages are spoken on the surface of the globe; these idioms or dialects of which man makes use to express his thoughts, are estimated at no less than two thousand. The most universally employed are the English, French, German, Russian, Spanish, Portuguese and Italian languages, which are spoken in Europe; the Chinese, Turkish and Persian in Asia; the Malayan in Oceanica. The civilized portions of America generally make use of the European languages. The Indians of North America speak the Algonquin, Huron, Sioux, &c.

44. Whence do the European languages derive their origin ?

There are three great branches to which the languages of Europe may be traced: from the Teutonic, are derived the English, German, Dutch, Swedish and Danish languages; from Latin, the French, Italians Spanish and Portuguese; from the Slavonic are derived the Russian, Polish and Bohemian idioms. Besides these, there are the modern Greek, the Turkish, the Celtic in Wales, Brittany, and Ireland; the Hungarian and Biscayan in the Pyrenees may be also mentioned.

POPULATION OF THE PRINCIPAL CITIES IN THE WORLD.

45. Name the cities which have one million of inhabitants and more.

X1 London.....3,883,000	4 Pekin.....1,800,000
Yeddo.....2,000,000	5 Constantinople.1,075,000
X3 Paris.....1,825,000	6 Canton.....1,000,000

46. Name the cities, from one million down to 500,000.

New York.....943,000	* Philadelphia. 674,000
Vienna.....825,000	* St. Petersburg 667,000
Bombay.....817,000	* Calcutta.....616,000
Berlin.....802,000	* Milan.....500,000
Nankang.....700,000	* Miako.....500,000
Tientsin.....700,000	* Nankin.....500,000
Soo-Choo.....700,000	* Foochow.....500,000
	* Hang-Chow.. 500,000

47. Name the cities from 500,000 down to 300,000.

Cities with a population of 400,000.

Liverpool	Rio-Janeiro	Madras
Glasgow	Brooklyn	Kienkang
Naples	Wootting	

Cities with a population of 300,000

Manchester,	* Madrid	Singap.
Birmingham,	Brussels	St. Louis, Mo.
Lyons,	Moscow,	Chicago.
Marseilles,	Lucknow	

48. Name the cities which have a population of 200,000 inhabitants.

PRINCIPAL ORLD.

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Cities of 200,000 inhabitants:

Leeds, *England* Warsaw, *Poland*

Sheffield, *England* Benares, *India* Aracan, 2

Dublin, *Ireland* Cashmere, *India* Baltimore,

Amsterdam, *Holland* Dacca, 2 Boston, *USA*

Rome, *Italy* Hyderabad, 2 Mexico, *Mexico*

Lisbon, *Portugal* Odepoor, 2 Havanah, *Cuba*

Hamburg, *Germany* Patna, 2 Buenos-Ayres, *Argentina*

Pesth, *Hungary* Amoy, 2

49. What cities have a population of 100,000 in-

habitants?

Cities of 100,000 inhabitants:

In Europe:

Bradford, *England* Barcelona, *Spain* Bremen, *Germany*

Bristol, *England* Valencia, *Spain* Breslau, *Germany*

Hull, *England* Murcia, *Spain* Konigsburg, *Russia*

New-Castle, *England* Malaga, *Spain* Cologne, *Germany*

Portsmouth, *England* Granada, *Spain* Dresden, *Germany*

Stoke-upon-Trent, *England* Seville, *Spain* Munich, *Germany*

Dundee, *Scotland* Genoa, *Italy* Prague, *Czechoslovakia*

Edinburg, *Scotland* Florence, *Italy* Copenhagen, *Denmark*

Belfast, *Northern Ireland* Turin, *Italy* Stockholm, *Sweden*

Lille, *France* Venice, *Italy* Riga, *Latvia*

Rouen, *France* Antwerp, *Belgium* Trieste, *Italy*

Nantes, *France* Ghent, 2 Odessa, *Ukraine*

Bordeaux, *France* Liege, *Belgium* Adrianople, *Bulgaria*

Toulouse, *France* Rotterdam, *Holland* Salona, *Bulgaria*

In Asia:

Aleppo, *Syria* Bucharest, *Romania* Surat, *India*

Beyrout, *Lebanon* Yarkand, *China* Oojein, *India*

Damascus, *Syria* Cawnpore, *India* Poona, *India*

Smyrna, *Turkey* Bareilly, *India* Osaka, *Japan*

Erzeroom, *Turkey* Baroda, *India* Bangalore, *India*

Tabreez or Tauris, *Iran* Delhi, *India* Bangkok, *Thailand*

Candahar, *Afghanistan* Nagpoor, *India*

Agra, *India* Saigon, *Vietnam*

In Africa: Alexandria, Fez., Tunis, Coomasie.
In Oceanica: Sidney, Melkourne, Manila.

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In America:
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Buffalo, *mont*
Washington, *pr*
Louisville, *e*
New-Orleans,
San-Francisco,
Montreal,
Lima,
Santiago,
Montevideo,
Bahia-Blanca or
Salvador.

50. Give the population of the principal cities in Canada.

Ottawa cap. of the	Domi-	Hamilton.....	19,000
nion of Canada..	20,000	Kingston.....	13,060
Quebec, cap. P. Q.	60,000	Halifax, cap. N. S.	28,000
Montreal.....	130,000	Frederickton,	
Three-Rivers.	10,000	cap. N. B.....	5,600
Toronto, cap. P. O.	44,000	St. John N. B..	30,000



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Bahia-Blanca or
Salvador.

Principal cities in

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.....	13,060
p. N. S.	28,000
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.....	5,600
. B..	30,000

TERRESTRIAL GLOBE.

1. What is the terrestrial globe?

The terrestrial globe is a ball representing the earth with the continents and seas on its surface. The globe turns on an axis the extremities of which are called poles. The poles rest in a circle called a meridian that can be moved in the horizon so as to elevate or lower the poles. Thus any place can be brought to the zenith: then the horizon of the globe represents the horizon of the place for which the globe has been elevated. By means of the globe, we can know the hour of the rising and setting of the sun at any given place, its meridian altitude, and perform many other interesting problems.

2. What are the circles of the globe.

On the surface of the globe, are drawn the six great, and the four lesser circles. The great circles have all one common centre, consequently they divide the earth into two equal parts. They are the Equator or Equinoctial, the Horizon, the Ecliptic and the two Colures. Each of the lesser circles divides the earth into two unequal parts: they are the two Tropics, and the two polar circles. The parallels of latitude are also lesser circles.

Every circle is divided into 360 equal parts called degrees, each degree is divided into 60 minutes, and each minute into 60 seconds. Half a circle comprehends 180° and one quarter of a circle 90° .

3. What is the horizon?

There are two horizons, the sensible and the rational horizon. That circle where the earth and sky seem

to meet, and where the sun appears at rising and setting, is called the sensible horizon. The rational or true horizon is an imaginary great circle passing round the earth, and dividing it into two hemispheres; the one superior and visible, which has for its pole the zenith, the other inferior and invisible which has for its pole the nadir. The circumference of this circle is divided into four quarters of 90° , which commence at the East and West points and terminate at the meridian. The second graduation contains the signs of the zodiac, with the corresponding months.

4. What are the meridians?

The meridians are those circles that pass from pole to pole, dividing the earth into eastern and western hemispheres. They are so called because when the sun comes directly opposite this circle, it is then *meri-dies* or mid-day to all places lying under it; the sun has then its greatest altitude for that day, which is therefore called its meridian altitude. There are commonly marked on the globe twenty four meridians, one through every fifteen degrees, corresponding to the twenty four hours of days and night. Every place has its own meridian, and a change of position towards the east or the west changes our meridian; but we may journey from pole to pole without changing it.

5. What is the equator?

The equator is a great circle equally distant from the the poles, dividing the globe into two equal parts called the northern and southern hemisphere.

From the equator, latitude is reckoned to 90° . Longitude is also marked on this circle from the first meridian to 180° east and west.

6. What is the ecliptic?

This great circle indicates the apparent annual revolution of the sun. It cuts the equator at two places

called the Equinoctial points, and deviating from them forms an angle of $23^{\circ} 28'$. The ecliptic is divided into twelve equal parts, called signs, each sign including 30° . The sun traverses these twelve signs in the course of a year, advancing each day about one degree.

7. What are the colures ?

The colures are two great circles which meet at the poles cutting each other at right angles. One of them passes through the equinoctial points, Aries and Libra, or the vernal equinox; the other passes through the Solstitial points, Cancer and Capricorn. Those two circles divide the ecliptic into four equal parts, and mark the four seasons of the year.

8. What are the lesser circles ?

The four lesser circles are the two tropics and the polar circles. The tropics are $23^{\circ} 28'$ from the equator; the polar circles are situated at the same distance from the poles. The whole surface of the terrestrial globe is divided by the tropics and polar circles into five zones. The Torrid zone is situated between the two tropics. The temperate zones lie between the tropics and the polar circles. The Frigid zones are between the polar circles and the poles. The Equator occupies the centre of the torrid zone and the poles the centre of the frigid zones.

9. What is the zodiac ?

The zodiac is a circular band of 16° , divided into two equal parts by the Ecliptic.

The term, zodiac, is derived from a Greek word which signifies animal. the twelve signs which it includes bearing the names and representing the figures of animals.

10. What are the signs of the zodiac ?

The northern signs where the sun appears in the spring and the summer, are Aries the Ram, which the

sun enters on the 21st of March; Taurus the Bull, Gemini the Twins: Cancer the Crab which the sun enters on the 21st of June; Leo the Lion; and Virgo the Virgin.

11. What are the Southern ?

They are the signs which the sun passes through from the 22d of September until the 21st of March: Libra the Balance; Scorpio the Scorpion; Sagittarius the Archer; Capricornus the Goat; Aquarius the Water Bearer: Pisces, the Fishes. The three first are the autumnal signs, and the three last the winter signs.

12. In what does the system of Ptolemy consist ?

Claude Ptolemy, an Egyptian astronomer who lived during the second century, supposed the earth to be in the centre of the universe, around which the sun, the planets and fixed stars revolved in the space of twenty-four hours. This system was followed until the 16th century, when it was replaced by that of Copernicus a celebrated Prussian astronomer. Copernicus supposed the sun, which is the source of light and heat to the planetary system, to be also the centre of their revolutions; the earth and the other planets revolving around the sun, from west to east, at different periods and at different distances.

13. What causes the succession of day and night ?

The succession of day and night is caused by the revolution of the earth on its axis every twenty-four hours from west to east.

By this rotation the earth presents each part of its surface in succession to the rays of the sun, at the rate of one degree every four minutes. The sun appears to rise for the places that are leaving the shade. It is mid-day for them when they are in the middle of the enlightened part. The sun sets for them when they begin to enter the shade, and it is midnight when they are in the centre of the obscure part.

14. What constitutes the year ?

The earth not only turns on its axis once every twenty-four hours ; it also revolves around the sun in the space of 365 days 5 hours and 48 minutes, or one year. This second revolution constitutes the year. The remaining five hours and 48 minutes amount, in four years to a whole day, which is added to the month of Feb. making leap year. The earth in its daily motion turns with the rapidity of 18 miles in a minute ; in its annual motion it flies with the velocity of 18 miles a second.

15. What causes the seasons ?

The variations of the seasons depend upon the axis of the earth being inclined towards a certain point of the heavens. In consequence of this position, the earth in its annual revolution receives the rays of the sun perpendicularly at the Equator, then at the Tropic of Cancer, and six months later at the tropic of Capricorn. When the rays of the sun fall more directly on the Northern hemisphere it is summer for that half of the globe ; when on the contrary they fall more directly on the North hemisphere, it is winter for us and summer for the south.

16. What is the position of the earth in the course of its revolution around the sun ?

The axis of the earth is inclined $23^{\circ} 28'$ directing the north pole to the polar star. It is in this position that the earth makes its diurnal as well as its annual motion.

17. Show the position of the globe for the inhabitants of the poles ?

By elevating the north pole to the south, the wooden horizon represents the horizon of the poles. When the sun's rays fall directly upon the Equator, at the equinox, half of his disk is visible at each of the poles. The sun continues to increase in declination towards

the south pole during three months till it reaches the summer solstice, $23^{\circ} 28'$ from the equinoctial line. Then it begins to decrease while the sun continues his daily course around the horizon, until, after six months, having reached the autumnal equinox, it disappears for the north pole, and begins to enlighten the south pole in the same manner.

This position of the globe is called the parallel sphere.

13. What is the right sphere ?

The right sphere is that position of the earth where the equinoctial passes through the zenith and nadir, the poles being in the horizon. This is the position of the globe for those who live at the Equator. The days and nights are of equal length.

19. What is the oblique sphere ?

The oblique sphere is that in which the horizon cuts the equator obliquely. All the inhabitants on the earth, except those who live at the equator and at the poles, have this position of the sphere ; for in elevating the poles for any latitude, the axis of the earth is placed obliquely. The length of their days and nights varies continually, as well as their morning and evening twilight.

20. What do you mean by the declination of the sun ?

The declination of the sun is its distance from the equinoctial on any given day. The declination may be either north or south, but it cannot exceed $23^{\circ} 28'$, because the sun never goes beyond the tropics.

21. What do you mean by the right ascension of the sun ?

The right ascension of the sun is its distance from the first degree of Aries reckoned around the globe, from west to east, on the equinoctial.

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22. What is meant by the meridian Altitude of the sun ?

The meridian altitude of the sun is its distance from the horizon, at mid-day, for any place on any given day. The greatest meridian altitude is one quarter of a circle, or 90° . The sun is then in the zenith.

23. How do we find the places where the sun is vertical ?

The sun is vertical for all these places whose latitude is equal to the declination of the sun. As the sun never goes beyond the tropics, it can only be vertical for the inhabitants of the torrid zone.

24. How can we ascertain the difference of time between two places ?

The most simple, manner to find the difference of time between two places, is to reckon the meridian lines that separate them, allowing four minutes to one degree or 15° to an hour. The sun rises earlier for that place which is situated to the east of the other.

25. How can the hour of the sun's rising and setting be found ?

To find the hour of the rising and setting of the sun, bring the given place to the zenith. Then, having found on the ecliptic the degree of the sun for the given day, bring the degree to the méridian, and set the index to twelve.

Turn the sun's place to the eastern part of the horizon, and the number of hours passed over by the index will be the time of the sun's rising ; in the same manner, the sun's setting will be found by turning the sun's place to the west.

26. How do you find the length of twilight at any given place ?

Having found the hour of the setting of the sun for that place, continue to turn the globe till the sun's

place below the horizon coincides with 18° of the quadrant of altitude, which has been previously screwed on the brass meridian, over the latitude of the given place. The index will then show when evening twilight ends, which subtracted from twelve, will give the beginning of morning twilight.

27. How do you find the length of the longest day, and the longest night, at any given place?

Having elevated the pole according to the latitude of the place, bring the summer solstice to the meridian and set the hour circle to twelve. Then having found the time of the sun's setting, we have half the length of the longest day, and consequently that of the longest night.

28. What is meant by the Antœci, Pericœci and Antipodes?

The Antipodes are those people who live diametrically opposite to each other. They have a common horizon; but their latitude and longitude, seasons, days, and nights are all contrary to each other. The Antœci live in the same semi-circle of the meridian, and in equal degrees of latitude; the one in north, the other in south latitude; consequently they have the same hours, but contrary seasons.

The Pericœci inhabit the same parallel of latitude, but in opposite longitude. They have the same seasons but contrary hours.

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Lisbon London
Glasgow Stockholm
Buenos Aires Paris
Lima Bogota
San Diego Lisbon
Rio Janeiro Berlin

